vice versa). In these and other embodiments, the encapsulating structure can comprise an annular front enclosure, an annular back enclosure, an annular inner side enclosure and an annular outer side enclosure and wherein the annular front enclosure and the annular back enclosure are joined to the annular inner side enclosure and the annular outer side enclosure by adhesive. In these and other embodiments, an alignment module can also comprise: a rotational alignment component comprising a rectangular magnet, and the encapsulating structure can hold the rectangular magnet in a fixed position outboard of the annular magnetic alignment component.

[0431] In some embodiments, an alignment module can comprise: an annular magnetic alignment component including a plurality of arcuate magnets; a rotational alignment component comprising a rectangular magnet and disposed outside a perimeter of the annular magnetic alignment component; and an encapsulating structure holding the annular magnetic alignment component and the rotational alignment component in a fixed spatial relationship to each other. Each arcuate magnet can have: an inner arcuate region having a magnetic polarity oriented in a first axial direction; an outer arcuate region having a magnetic polarity oriented in a second axial direction opposite the first axial direction; and a non-magnetized central arcuate region disposed between the inner arcuate region and the outer arcuate region. In these and other embodiments, the encapsulating structure can comprise: a front planar layer; a back planar layer; and a magnet-holding layer, the magnet-holding layer having a circular opening therethrough to accommodate the annular magnetic alignment component and a rectangular opening therethrough to accommodate the rectangular magnet. In these and other embodiments, the magnet-holding layer, the arcuate magnets, and the rectangular magnet can have equal thicknesses, and the magnet-holding layer includes a disc of material filling a region inboard of the annular magnetic alignment component. In these and other embodiments, a first adhesive layer can attach the front planar layer to the magnet-holding layer, and a second adhesive layer can attach the back planar layer to the magnet-holding layer. In these and other embodiments, the front planar layer and the back planar layer can be rectangular layers with rounded corners. In these and other embodiments, the encapsulating structure can have an opening through a region inside an inner perimeter of the annular magnetic alignment component.

[0432] In some embodiments, an alignment module can comprise: an annular magnetic alignment component including a plurality of arcuate magnets, an encapsulating structure surrounding and holding the arcuate magnets in an annular arrangement; and a near-field communication (NFC) coil disposed within the encapsulating structure and coaxial with the annular magnetic alignment component, the NFC coil coupled to an NFC tag circuit. In these and other embodiments, each arcuate magnet can have: an inner arcuate region having a magnetic polarity oriented in a first axial direction; an outer arcuate region having a magnetic polarity oriented in a second axial direction opposite the first axial direction; and a non-magnetized central arcuate region disposed between the inner arcuate region and the outer arcuate region. In these and other embodiments, the NFC coil can be disposed inboard of the annular magnetic alignment component, and other NFC tag circuit components can be disposed inboard of the annular magnetic alignment component and or in gaps between certain arcuate magnets of the annular magnetic alignment component. In these and other embodiments, the encapsulating structure can comprise: a front planar layer; a back planar layer; and a magnet-holding layer, the magnet-holding layer having a circular opening therethrough to accommodate the annular magnetic alignment component (and the NFC coil). In these and other embodiments, the magnet-holding layer and the arcuate magnets can have equal thicknesses. In these and other embodiments, the magnet-holding layer can include a disc of material filling a region interior to the annular magnetic alignment component and the NFC coil. In these and other embodiments, an alignment module can further comprise: a rotational alignment component comprising a rectangular magnet and disposed outboard (or outside a perimeter) of the annular magnetic alignment component, and the magnet-holding layer can have a rectangular opening therethrough to accommodate the rotational alignment component.

[0433] Accordingly, although the invention has been described with respect to specific embodiments, it will be appreciated that the invention is intended to cover all modifications and equivalents within the scope of the following claims.

What is claimed is:

1. A portable electronic device comprising:

a housing having an interface surface;

an inductive coil disposed within the housing and having an axis normal to the interface surface, the inductive coil being configured to transfer power wirelessly through the interface surface;

an annular magnetic alignment component disposed within the housing coaxial with and outboard of the inductive coil, the annular magnetic alignment component including a plurality of sectors, each sector having a magnetic orientation with a radial component;

a near-field communication (NFC) coil disposed within the housing and coaxial with the inductive coil, the NFC coil coupled to an NFC reader circuit and configured to wirelessly exchange signals with another device through the interface surface;

a magnetometer disposed near the interface surface and outboard of the annular magnetic alignment component; and

control circuitry coupled to the magnetometer and configured to trigger operation of the NFC reader circuit based at least in part on a change in a magnetic field detected by the magnetometer.

2. The portable electronic device of claim **1** wherein the magnetometer is a three-axis magnetometer and the change in the magnetic field includes a change in either or both of a magnitude or a direction of the magnetic field.

3. The portable electronic device of claim **1** wherein the control circuitry is further configured to trigger operation of the NFC reader circuit in the event that the change in the magnetic field corresponds to an expected change associated with an accessory device having a second magnetic alignment component complementary to the annular magnetic alignment component of the portable electronic device becoming aligned with the portable electronic device.

4. The portable electronic device of claim **3** wherein the NFC reader circuit is operable in a plurality of operating modes associated with different types of accessory devices and wherein the control circuitry is further configured to